David A. LaFuria
8300 Greensboro Dr.
Suite 1200
Tysons, VA 22102

dlafuria@fcclaw.com
(703) 584-8666
www.fcclaw.com

LLGS | LUKAS LAFURIA GUTIERREZ & SACHS LLP

July 27, 2017

VIA ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W., Room TW-B204
Washington, DC 20554

REDACTED – FOR PUBLIC INSPECTION

Attn: Wireline Competition Bureau
Wireless Telecommunications Bureau

Re: WC Docket No. 10-90
WT Docket No. 10-208

Madam Secretary:

On behalf of Nex-Tech Wireless, LLC and Smith Bagley, Inc. ("Carriers"), we write to submit information for the record in the above-captioned proceedings. As described in more detail below, included with this submission is a request for confidential treatment for the enclosed maps, which depict the Carriers' real-world coverage to a level of detail not available in any public forum. We have also included a declaration of Ms. Leila Rezanavaz in support of the technical information provided below.

We are also submitting to the Commission, under separate cover, a confidential version of this letter, which has been marked "CONFIDENTIAL – NOT FOR PUBLIC INSPECTION," together with a request for confidential treatment.

Technical Factors for One-Time Map Filings.

As the Commission considers its challenge process, in the above-captioned proceedings, the initial map submission should include cell edge boundaries at the 90% probability level and a cell loading factor of 50%. Between the two, the cell edge boundary is more important because it affects LTE coverage more than cell loading. Specifically, a change from 90% probability to 70% has a significant effect on the cell radius and corresponding coverage area.

As shown in the attached map, engineering analysis performed by Nex-Tech indicates that a move from 90% probability to 70% at the cell edge will increase coverage area by nearly 35%. The map submitted by SBI similarly shows a significant increase in coverage resulting

from the move to 70%. According to SBI's engineer, Leila Rezanavaz, when using a 70% probability at the cell edge for 5 Mbps of service, there is only a 70% probability that a mobile unit would receive a signal equal to or above the design threshold at the cell edge, which is viewed as unreliable service. In nearly three decades of designing wireless networks, including LTE, Ms. Rezanavaz has never designed a cell site with less than 90% coverage probability at the cell edge, but ordinarily designs at the 95% level, which translates to a 99% coverage probability over the entire cell area.

If the Commission moves to a 70% probability, it will result in maps that do not match networks as they operate in the real world. If a network was designed at the 70% level, the system's ability to hand-off calls among cell sites would be compromised and consumers would receive relatively poor-quality service, or no service, at the cell edge. As detailed in the attached maps, coverage differences can be dramatic. In the case of Nex-Tech, moving from 90% to 70% results in a coverage gain of 34.84% throughout their network.

With the help of industry leading equipment vendors, we can provide a portion of a link budget that focuses on cell edge coverage probability and cell loading. As seen in the chart below, changing probability from 90% to 75% and cell loading from 50% to 30% results in an increase of five miles in cell radius and 500 square miles of coverage.[1]

Scenarios	A	B
Cell Edge Probability	90%	75%
Cell Loading	50%	30%
Cell Radius (Mi)	13.4	18.4
Area Covered (Sq. Mi)	563.8	1063.1

Assumptions:

Frequency Band:	700 MHz
Operation BW:	10 MHz
DL Data Rate:	5 Mbps
RSB Power:	60 W
Ant Height:	100 ft
Ant Gain:	160 dBi
Environment	Rural

[1] We note that the vendor specified 75% probability because their tools do not go any lower than 75%, and they advised that they never designed a cell site at the 70% level.

It is a well-accepted fact that today, those living in urban areas receive a higher quality of service, both in terms of coverage and in throughput, than do rural residents. Yet, even in rural areas, nearly everyone has a wireless phone. Rural citizens have a phone because it is vital, even if it does not perform as well as it should or could, were it possible for the market to deliver robust coverage and throughput. For many if not most carriers serving low-density rural areas, it is a fact that adding cell sites in dead zones does not result in any new customers, or in existing customers spending more on service, especially where competition is poor or non-existent. It is precisely in these areas where Mobility Fund support should be directed, to bring rural network quality up to a level that is reasonably comparable to that which is available in urban areas.

In sum, a robust universal service mechanism is the only way to encourage and incent new investment in low-density, low-return areas. Using 70% probability, 30% loading factor, and 5 Mbps thresholds will block out for a decade many rural areas that need Mobility Fund support. By 2028, it is entirely possible that many of these areas will be further behind their urban counterparts than they are today. Accordingly, the Carriers urge the Commission to return to a 90% probability level and 50% loading factor, which is consistent with how networks are built, and which will result in an accurate picture of where service is actually available in rural America.

Request for Confidential Treatment

The Carriers respectfully request confidential treatment of commercial information contained in the enclosures accompanying this letter. The confidential and proprietary commercial information contained in the enclosures is competitively sensitive and its disclosure would have a negative competitive impact on the Carriers were it to be made publicly available. This information would not ordinarily be made available to the public, and should be afforded confidential treatment pursuant to Section 0.459 of the Commission's Rules, 47 C.F.R. § 0.459.[2]

47 C.F.R. § 0.459

Specific information contained in the enclosures is subject to protection under Section 0.459 of the Commission's Rules, 47 C.F.R. § 0.459, as demonstrated below.

[2] Section 0.457(d)(2) of the Commission's Rules, 47 C.F.R. § 0.457(d)(2), provides that, if a person seeks confidential treatment of any materials not listed in Section 0.457(d)(1), such person "must submit a request for non-disclosure pursuant to §0.459. If it is shown in the request that the materials contain trade secrets or privileged or confidential commercial, financial or technical data, the materials will not be made routinely available for inspection …." The confidential and proprietary commercial information for which the Carriers seek confidential treatment is not listed in Section 0.457(d)(1), and the Carriers therefore are submitting their request for confidential treatment pursuant to Section 0.459.

Information for which confidential treatment is sought (§ 0.459(b)(1))

The Carriers request that specific information contained in the enclosures be treated on a confidential basis under Exemption 4 of the Freedom of Information Act.[3] The information designated as confidential is included in maps (the "Coverage Maps" or "Maps") depicting predicted areas of signal coverage produced by mobile broadband networks based on differing assumptions concerning the percentage of cell edge probability and the percentage of cell loading factor parameters. Unlike typical coverage maps available from publicly available sources, the attached maps contain more precise coverage data, which would allow competitors to see with granularity each of the Carriers' coverage strengths and weaknesses at each cell site location.

The information in the Coverage Maps constitutes confidential and proprietary information and is marked "**CONFIDENTIAL – NOT FOR PUBLIC INSPECTION**." The information in the Coverage Maps constitutes competitively sensitive information that the Carriers maintain as confidential and that is not normally made available to the public. Release of the information would have a substantial negative impact on the Carriers since it would provide potential competitors with commercially sensitive information.

Commission proceedings in which the information was submitted (§ 0.459(b)(2))

The information contained in the enclosures is being submitted in WC Docket No. 10-90 (Connect America Fund) and WT Docket No. 10-208 (Universal Service Reform – Mobility Fund).

Degree to which the information in question is commercial or financial, or contains a trade secret or is privileged (§ 0.459(b)(3))

The information in question is competitively sensitive commercial information that is not normally released to the public, as such release would have a substantial negative competitive impact on the Carriers.

Degree to which the information concerns a service that is subject to competition and manner in which disclosure of the information could result in substantial harm (§§ 0.459(b)(4), 0.459(b)(5))

[3] 5 U.S.C. § 552(b)(4) (providing that "trade secrets and commercial or financial information obtained from a person and privileged or confidential" are not subject to the public information requirements of the Freedom of Information Act).

The Commission has determined that "[t]here must be specific evidence substantiating an assertion that release of a record would cause substantial competitive harm to the person from whom the information was obtained."[4] As demonstrated below, the release of the confidential and proprietary information contained in the Coverage Maps could cause the Carriers substantial competitive harm.

Disclosure of information contained in the Coverage Maps could cause substantial competitive harm to the Carriers because the significant level of detail in the Maps' depiction of areas covered (and not covered) by the mobile broadband networks' operations makes the information valuable for use by competitors, for example, in making decisions concerning their deployment or upgrading of broadband networks to compete against the Carriers, and in advertisements aimed at exploiting coverage gaps in the Carriers' networks.

Measures taken by the Carriers to prevent unauthorized disclosure and availability of the information to the public and extent of any previous disclosures of the information to third parties (§§ 0.459(b)(6), 0.459(b)(7))

The Carriers have treated and continue to treat the Coverage Map information in the enclosures as confidential and proprietary, and have protected it from public disclosure to third parties.

Justification of the period during which the Carriers assert that the material should not be available for public disclosure (§ 0.459(b)(8))

The Carriers cannot determine at this time any date on which the information contained in the Coverage Maps contained in the enclosures should not be considered confidential and proprietary, and withheld from public inspection.

Other information the Carriers believe may be useful in assessing whether their request for confidentiality should be granted (§ 0.459(b)(9))

Under applicable Commission decisions, the information referenced in this request for confidential treatment should be withheld

[4] *Joseph A. Sofio, Application for AWS-3 Licenses in the 1695-1710 MHz, 1755-1780 MHz and 2155-2180 MHz Bands*, File No. 0006670108, Memorandum Opinion and Order, 32 FCC Rcd 1781, 1787 (para. 14) (footnote omitted) (2017).

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Should you have any questions, please contact undersigned counsel directly.

Respectfully submitted,

David LaFuria
Counsel for Nex-Tech Wireless, LLC and
Smith Bagley, Inc.

Enclosures

cc: Nicholas Degani
Jay Schwarz
Rachael Bender
Amy Bender
Daudeline Meme
Margaret Wiener
Chelsea Fallon
Audra Hale-Maddox
Gary Michaels
Michael Janson
Christiaan Segura
Paroma Sanyal
Jessie Friend
Patrick Sun
Kenneth Lynch
Jonathan McCormack
Murtaza Nasafi
Ben Freeman
Thomas Parisi
Kathryn Hinton
Thuy Tran
Jeremy Greenberg

Declaration of Leila Rezanavaz

I, Leila Rezanavaz, hereby provide the following declaration in support of a letter submitted by Nex-Tech Wireless, LLC and Smith Bagley, Inc. to the FCC on July 27, 2017.

I am professional radiofrequency engineer with over 27 years' experience designing wireless networks across the world and in the United States for our clients, including LTE networks.

I graduated from George Mason University in Fairfax, Virginia, with a Bachelor of Science degree in Electrical and Computer Engineering in 1989.

The FCC proposes to have mobile wireless carriers submit mapping data depicting existing coverage throughout the nation. As I understand the proposal, the Commission would have carriers specify a 70% probability at the cell edge for 5 Mbps of service. At the 70% probability level, there is only a 70% probability that a mobile unit would receive a signal equal to or above the design threshold at that cell edge, which is viewed as unreliable service. In nearly three decades of designing wireless networks, including LTE, I have never designed a cell site with less than 90% coverage probability at the cell edge. Ordinarily we design cell sites at the 95% level, which translates to a 99% coverage probability over the entire cell area.

When the Commission moves to a 70% probability, it will result in maps that do not match networks as they operate in the real world. If a network were designed at the 70% level, the system's ability to hand-off calls among cell sites would be compromised and consumers would receive relatively poor service at the cell edge. We've consulted with industry leading equipment vendors to provide a portion of a link budget that focuses on cell edge coverage probability and cell loading. As seen in the chart below, changing probability from 90% to 75% and cell loading from 50% to 30% results in an increase of five miles in radius and 500 square miles.[1]

Scenarios	A	B
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Assumptions:

Frequency Band: 700 MHz
Operation BW: 10 MHz

[1] The vendor we worked with used 75% probability because their tools do not go any lower than 75%, and I was informed that the vendor has likewise never designed a cell site at the 70% level.

DL Data Rate:	5 Mbps
RSB Power:	60 W
Ant Height:	100 ft
Ant Gain:	160 dBi
Environment	Rural

Accordingly, it is my professional judgment that if the FCC reduces cell edge probability from 90% to 70%, it will result in maps showing significant additional coverage in areas that do not receive a quality of service consistent with how networks are designed in the real world.

Leila Rezanavaz

Leila Rezanavaz

Dated: July 27, 2017

LTE COVERAGE MAPS

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[Enclosures are withheld in their entirety pursuant to the Carriers' request for confidential treatment.]